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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/002,291	12/05/2001	Tomoya Ohnishi	35.C16001	4392

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EXAMINER

ROY, SIKHA

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 08/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/002,291

Applicant(s)

OHNISHI, TOMOYA *H*

Examiner

Sikha Roy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-12, 17, 19 and 23-26 is/are rejected.
- 7) ☒ Claim(s) 6, 13-16, 18 and 20-22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

Figures 11-13 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the averaged height Da of portion of the anode contacting the spacing member, the averaged height Db of the potential regulating electrode contacting the spacing member and the averaged height Dc of the structure contacting the spacing member as claimed in claims 6 and 18 must be shown or the feature(s) canceled from the claims.

Additionally, the interval between the projected position of an extreme point on the anode side of the potential regulating electrode to the spacing member and a position of an extreme point on the anode side of the electrode of the spacing member as claimed in claim 14 and the interval between the projected position of an extreme point on the potential regulating electrode side of the anode to the spacing member and a position of an extreme point on the potential regulating electrode side of the electrode of the spacing member as claimed in claim 15 must be shown or the feature(s) canceled from the claims.

No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Objections***

Claims 5, 19 and 20 are objected to because of the following informalities:

In claim 5, line 4, --is-- should be included before 'supplied to the electron beam source'.

In claims 19 and 20, 'spacing member of the second plate' should be replaced by --spacing member--. The second plate comprises of the anode, the potential regulating electrode and a structure but not the spacing member.

Appropriate corrections are required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-12,17,19,23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1117124 A2 to Ando, and further in view of U.S. Patent 6,184,619 to Yamazaki et al.

Regarding claim 1 Ando discloses (Fig. 11 page 8 lines 30-55) an image displaying apparatus comprising a first plate including electron beam source 2, a second plate 11 including anode 12 to which electric potential for accelerating electron beam is applied and a potential regulating electrode 5 (conductive film) with a potential lower than that applied to image forming member (page 9 line 20-22) and a spacing member 101 provided between the first and second plates contacting both the anode and the potential regulating electrode, having a length greater than that of the image forming member in the longitudinal direction extending to the potential regulating electrode.

Claim 1 differs from Ando in that Ando does not exemplify the spacing member including an electrode contacting or being disposed close to the potential regulating electrode.

Yamazaki in analogous art of image forming apparatus discloses (Fig. 14 column 12 lines 20-30) the spacer comprising a high-resistance film 11 for effectively relaxing charge-up on the surface of the insulating member 1 and a low-resistance film 21 serving as an electrode formed on an abutment surface facing the inner surface of the faceplate. Yamazaki further discloses that this electrode in the spacing member serves to electrically connect the high resistance film 11 to the faceplate and bottom substrate and relaxes the charge built-up at the contact point of the spacer and the anode.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include an electrode (low resistance film) in the spacing member contacting the potential regulating electrode of Ando for relaxing charge built up at the contact point of the spacer and the potential regulating electrode and connecting the high resistance film underneath electrically connect with the potential regulating electrode and the bottom substrate.

Regarding claim 2 Ando and Yamazaki disclose the apparatus with the spacing member including an electrode close to the anode thereby electrically connected with the anode.

Regarding claim 3 Yamazaki discloses (Fig. 14 column 12 lines 38-43) the spacing member further including an electrode (low resistance film) 21 disposed on the first plate and electrically connected to the plate.

Referring to claim 4 Ando discloses (page 9 line 24) that earth potential is supplied to the potential regulating electrode (conductive film 5).

Regarding claim 5 the electron beam source has the lowest potential applied to it.

Regarding claims 7 and 8 Ando discloses (Fig. 9 page 10 lines 17-37) a high resistance membrane (second conductive film) 14 having a sheet resistance in the range of  $10^7(\Omega/\square)$  to  $10^{14}(\Omega/\square)$  in an area of the second plate and the potential regulating electrode.

Regarding claims 9 and 10 Yamazaki discloses (column 13 lines 1-10) a high resistance membrane is formed on the spacer having a sheet resistance preferably set

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to  $10^{11}(\Omega/\square)$  or less for obtaining sufficient charge-up prevention effect. As this membrane essentially covers the spacer it would be obvious to include the high resistance membrane existing between the portion contacting the anode and the potential regulating electrode.

Claim 11 essentially recites the same limitations of claims 1, 2 and 7 and hence is rejected for the same reason.

Claim 12 essentially recites the same limitations of claims 1, 2 and 9 and hence is rejected for the same reason.

Referring to claim 17 Ando discloses in Fig. 9 a structure (second conducting film) 14 between the potential regulating electrode 5 and the anode contacting the spacing member the longitudinal end of which extends up to the end of the potential regulating electrode (Fig. 11).

Referring to claim 19, Ando discloses (page 10 lines 17-37) the structure (a high resistance membrane (second conductive film)) 14 having a high sheet resistance in the range of  $10^7(\Omega/\square)$  to  $10^{14}(\Omega/\square)$ .

Regarding claims 23 and 24, Yamazaki discloses the spacing member includes a high resistance membrane having sheet resistance preferably set to  $10^{11}(\Omega/\square)$  or less.

Regarding claim 25 Ando discloses (page 13 lines 9-14) the electron beam source provided on the first plate in a matrix.

Regarding claim 26 Ando discloses (page 6 lines 35-38) the electron beam source is a surface conductive type electron emitting device.

***Allowable Subject Matter***

Claims 6,13 -16, 18, 20-22 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 6 the prior art of record neither shows nor suggests the image displaying apparatus with all the limitations as claimed particularly the limitation comprising the average height  $D_a$  of a portion of the anode contacting the spacing member on outside of the image area with surface roughness  $R_a$ , the average height  $D_b$  of a portion of the potential regulating electrode contacting the spacing member, with surface roughness  $R_b$  satisfying following conditions :  $|D_a - D_b| \leq 2R_a$  and  $|D_a - D_b| \leq 2R_b$ .

Regarding claim 13 the prior art of record neither shows nor suggests the image displaying apparatus with all the limitations as claimed particularly the limitation comprising the interval between the electrodes contacting the anode and the potential regulating electrode is substantially same as the interval between the anode and the potential regulating electrode.

Regarding claim 14 the prior art of record neither shows nor suggests the image displaying apparatus with all the limitations as claimed particularly the limitation comprising the interval between a projective position of an extreme point on the anode side of the potential regulating electrode to the spacing member and a position of an extreme point on the anode side of the electrode contacting the potential regulating



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electrode is ten percent or less of an interval between the potential regulating electrode and the anode.

Regarding claim 15 the prior art of record neither shows nor suggests the image displaying apparatus with all the limitations as claimed particularly the limitation comprising the interval between a projective position of an extreme point on the potential regulating electrode side of the anode to the spacing member and a position of an extreme point on the potential regulating electrode side of the electrode of the spacing member contacting the anode is ten percent or less of an interval between the potential regulating electrode and the anode.

Regarding claims 16 and 21, the prior art of record neither shows nor suggests the image displaying apparatus with all the limitations as claimed particularly the limitation comprising the spacing member contacting a portion between the potential regulating electrode and the anode.

Regarding claim 18 the prior art of record neither shows nor suggests the image displaying apparatus with all the limitations as claimed particularly the limitation comprising the average height  $D_a$  of a portion of the anode contacting the spacing member on outside of the image area with surface roughness  $R_a$ , the average height  $D_b$  of a portion of the potential regulating electrode contacting the spacing member, with surface roughness  $R_b$  and the averaged height  $D_c$  of the structure contacting the spacing member satisfying following conditions :  $|D_a - D_c| \leq 2R_a$  and  $|D_b - D_c| \leq 2R_b$ .

Regarding claim 20 the prior art of record neither shows nor suggests the image displaying apparatus with all the limitations as claimed particularly the limitation

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comprising the high resistance membrane having a volume resistivity lower than that of the structure is formed on the surface of the structure contacting the spacing member.

Regarding claim 22, the prior art of record neither shows nor suggests the image displaying apparatus with all the limitations as claimed particularly the limitation comprising the structure of the spacing member for contacting the area between the anode and the potential regulating electrode is a projecting configuration.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 5,760,538 to Mitsutake et al. and U.S. Patent 6,486,610 to Kojima et al. disclose image forming apparatus with spacers with resistive membranes.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

*S.R.*  
Sikha Roy  
Patent Examiner  
Art Unit 2879

*Ashok Patel*  
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PRIMARY EXAMINER